REMARKS

The claims have been amended as needed so as to sharpen their definition of the invention relative to the cited references.

Specifically, the limitations of claim 2 have been added to claim 1, it now being specified that the excitation frequency (f) is greater than the predetermined frequency (FI) of the frequency component to be isolated. Claim 2 had previously recited the possibility of one being equal to the other.

Reconsideration is respectfully requested, for the rejection of the claims as anticipated by DUKART et al.

Although only the embodiment of Figure 5 of DUKART was discussed in the Official Action, we will comment on the embodiment shown in Figure 4, because that embodiment is described more precisely than, and works in the same way as, the embodiment of Figure 5.

The apparatus of Figure 4 of DUKART comprises a permanent magnet (2) fixed to a shaft (1), two Hall sensors (6, 7) adapted to detect the magnetic field (B) generated by the permanent magnet (2) and to produce an output signal representative of the angle of rotation (α) of the shaft (1) (see Figure 1, column 1).

The apparatus comprises an alternating power supply generator (2) for the Hall sensors (6, 7) at an excitation frequency of $2\pi W$ (see column 6, lines 6-17), a measurement chain

(20-27), one input of which is connected to the Hall sensors (6, 7) and the output of which provides a piece of information representative of the magnetic field in the region of the Hall sensors (6, 7).

The measurement chain comprises a summing circuit (23) and phase comparator (25).

The signals outputted from the Hall sensors (6, 7) are added in the summing circuit (23) to obtain an output signal which is compared in the phase comparator (25) to a signal representative of the current applied to the Hall sensors (6, 7).

A filter (37) is adapted to average the signals representing the angle of rotation (α) (column 7, lines 40-50). This filter is not adapted to isolate a frequency component for a single predetermined frequency.

The signal outputted from the phase comparator (25) has angular frequency components ($2\pi W$, $2\pi 3W$, $2\pi 5W$...). Each of these angular frequencies has a phase $K\alpha$, $-K\alpha$, $K\alpha$... (column 7, lines 16-19). An angular frequency component (W or 3W) is filtered out by a filter (not illustrated) connected between the summing circuit (23) and the phase comparator (25) (column 7, lines 20-27). This filter is adapted to isolate the angular frequency component for a predetermined frequency equal to $2\pi W$ or $2\pi 3W$.

However, the excitation frequency of the alternating power supply generator (20) is not greater than the predetermined frequency of the frequency component to be isolated, because in

DUKART, the predetermined frequency of the frequency component to isolate is equal to $2\pi W$ or $2\pi 3W$ and the excitation frequency of the power supply generator is equal to $2\pi W$. Thus, the excitation frequency of the power supply generator is always lower than the predetermined frequency of the frequency component to be isolated.

Accordingly, amended claim 1 is novel with respect to the embodiment illustrated in Figure 4 of DUKART.

The embodiment illustrated in Figure 5 is similar to that of Figure 4. In particular, it comprises a signal generator (28) (the excitation frequency of which is not described), two sensor elements (30, 31) and a measurement chain with an input connected to the sensor elements (30, 31) and an output adapted to give information representative of the angle of rotation α of the sensor elements (30, 31).

The measurement chain comprises an amplifier (32, 33) linked to the sensor elements (30, 31), and a summing circuit (34) adapted to sum the signals outputted from the amplifiers (32, 33). The signal outputted from the summing circuit (34) is filtered by the filter (35) and compared to a signal representative of the signal applied to the element sensors (30, 31). Finally, the signal outputted from the first comparator (36) goes through a low-pass filter (35).

The embodiment illustrated in Figure 5 is similar to that in Figure 4 except for the existence of the amplifiers (32, 33) and of the filter (35).

The amplifiers (32, 33) increase the amplitude of the signals outputted from the sensor elements (30, 31). They do not isolate a frequency component.

The filter (35) converts the rectangular signals received form the summing circuit (34) into a sinusoidal signal (see column 7, line 45). Thus, the filter (35) isolates a frequency component of the signal.

DUKART neither mentions the excitation frequency of the alternating power supplied generator (28) nor the predetermined frequency of the frequency component to be isolated by the filter (35).

Thus, DUKART does not disclose that the excitation frequency (F) of the alternating power supplied generator is <u>greater</u> than the predetermined frequency of the frequency component to be isolated.

Actually, the function of the filter (35) is only to improve the quality of the signal inputted in the phase comparator (36) to facilitate the phase comparison.

Accordingly, the embodiment of Figure 5 works like that of Figure 4, except for some components (amplifier (32, 33) and filter (35)) related to the amelioration of the quality of the signal.

Thus, in the embodiment illustrated in Figure 5, the excitation frequency (F) is not greater than the predetermined frequency (FI) of the frequency components to be isolated as now claimed in claim 1.

One skilled in the art would not consult DUKART because this document measures the angle of rotation (α) of a shaft (1), whereas the present invention measures a magnetic field to measure the rotation produced by an electrical circuit during operation (see specification at page 1, lines 7-12).

However, if DUKART is the closest prior art, the objective technical problem to resolve with respect to this document is to find a device <u>capable of sampling the magnetic field to be measured</u>.

The device of the invention achieves this technical problem by supplying the sensor elements with a power generator having a frequency greater than the predetermined frequency of the frequency component to be isolated.

One skilled in the art would not find any teaching which would suggest a solution to this problem in DUKART.

The measuring device of DUKART is in an environment where only one magnetic field exists. Therefore, it does not need to sample the magnetic field to be measured. The measuring device of DUKART aims to determine the angle of rotation (α) of the shaft (1) (see column 1, lines 7-16). It could not determine this angle of rotation (α) if it did not know the magnetic field

(B). On the contrary, the measuring device of the invention is in an environment where several magnetic fields can be detected, i.e., the terrestrial magnetic field, the magnetic field generated by the current induced in some parts of the circuit due to the exciting circuit (14), and the magnetic field to be measured.

Accordingly, one skilled in the art would not consult DUKART to find out how to measure the magnetic field.

But even if DUKART were consulted, one would find in this document neither a solution to the problem nor even a suggestion to find the sought solution.

As claim 1 as amended clearly brings out these distinctive features of unobvious novelty with ample particularity, it is believed that it is patentable, and with it the claims that depend therefrom.

In view of the present amendment and the foregoing remarks, therefore, it is believed that this application has been placed in condition for allowance, and reconsideration and allowance are respectfully requested.

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any

overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

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